

2023 Certified Installer Training

Refresher
April 14, 2023



**Alaska Department of Environmental Conservation
Engineering Support and Plan Review Section**

Refresher Training Program

- Consists of 2 live online sessions this year
 - Sessions will be recorded and available until April 24
- **Session 1 – April 13 (combined with initial installers)**
 - Introduction to the Environmental Data Management System (EDMS) or Ed
 - New system for submissions (replaces OASys)
 - Also now manages your Certified Installer status or “permit”
- **Session 2 - April 14 (today!):**
 - Housekeeping items
 - Refresh on soils and application rates
 - Reminders on “paperwork”
 - Open Discussion and Questions

Completing the Training Program

<https://dec.alaska.gov/water/wastewater/engineering/course-training-material>

- Online learning modules (optional)
 - 3 lessons available now!
- Certification Statement & Written Exam
 - You must sign a certification statement that you have attended (or watched the recording) of the 2 training webinars required.
 - The exam will be emailed later today to those not exempt from taking the exam
 - The written exam must be submitted no later than 5 pm on April 24 via email to ryan.peterson@alaska.gov
- Summer Field Session (first available 2024)
 - 1-day in depth soils and sites field course
 - 1 each located in Kenai, Fairbanks, and Wasilla/Palmer

Summer 2024 Field Session

- Will cover soils in depth with samples
 - Classification of soils by look, feel, and dirty gradations
- Will be a hands-on experience!
 - How to perform a percolation tests*
 - Other field methods for better soil classifications

You can help us make the first field sessions the best possible by sending us soil samples with a picture of your test hole profile and location.

*unless the adopted amended regulations do not allow Certified installers to perform their own percolation tests

Staff Contacts

- Ryan Peterson
 - Lead for onsite wastewater system registrations
 - Grades Exams, issues certifications
 - Specializes in areas covered by the Soldotna and Juneau offices
- Tony Sonoda
 - Manages class registration
 - Specializes in areas covered by the Fairbanks office
- Martha Harrison
 - Specializes in areas covered by the Wasilla office
- Engineers in the Engineering Support and Plan Review section may also be contacted with questions and will provide any approvals needed for installations that do not meet the prescriptive requirements
 - <https://dec.alaska.gov/water/wastewater/engineering/area-offices>

Refresh on Select Topics

Seasonal high groundwater (no slide)

Drawing Details (no slide)

Soils and Application Rates

Lift Station Controls

Test Holes



Keep a Sample!

Reminder: you must dig test hole to at least 6' below bottom of field!

Soil Classification Methods

**American Association
of State Highway &
Transportation Officials
Classification
(AASHTO)**

**Unified Soil
Classification**

**U.S. Department
of Agriculture
Soil Textural
Classification**

sieve sizes

particle sizes (mm)

clay	silt	sand		gravel/stones	boulders/ broken rocks																								
		fine	coarse																										
fines (clay and silt)		sand			gravel	cobbles																							
		fine	medium	coarse																									
clay	silt	very fine sand	fine sand	med. sand	coarse sand	very coarse sand	gravel	cobbles/ channers																					
sieve sizes																													
particle sizes (mm)																													
.001	.002	.003	.004	.006	.008	.01	.02	.03	.04	.06	.08	.1	.2	.3	.4	.6	.8	1.0	2.0	3.0	4.0	6.0	8.0	10	20	30	40	60	80
													270	200	140	60	35	18	10		4		1/2"	3/4"				3"	

WASTEWATER APPLICATION RATES

Percolation Rate ^a (minutes/inch)	Soil Texture (Unified Soil Classification)	Application Rate in sf/bedroom	Application Rate in gpd/sf for design flows ≤ 2,500 gpd	Application Rate in gpd/sf for design flows >2,500 gpd
Faster than 1	Gravel (GW/GP)	Not Suitable ^b	Not Suitable ^b	Not Suitable ^b
1 – 5	Gravel (GW/GP)	125	1.2	0.79 – 0.98
1 – 15	Medium to coarse sand (SW/SP)	150	1.0	0.67 – 0.89
6 – 15	Fine sand or loamy sand	190	0.8	0.61 – 0.74
16 – 30	Sandy loam, silty gravel (GM), silty sand (SM)	250	0.6	0.52 – 0.61
31 – 60^c	Loam, silt loam, silt (ML)	335	0.45	0.25 – 0.52
61 – 120^d	Silty clay loam, clay loam ^e	Not Suitable ^d	Not Suitable ^d	Not Suitable ^d

- a. Percolation tests must be performed by a registered engineer in accordance with EPA method.
- b. GW/GP soils with percolation rates faster than one minute/inch may have a shallow trench or bed type system installed with a 2-foot thick sand liner. Application rate must be 150 sf/bedroom or 1.0 gpd/sf.
- c. Soils with percolation rates slower than 30 minutes/inch are unsuitable for seepage pits.
- d. Soils with percolation rates slower than 60 minutes/inch require an engineer design and plan approval. Soils with percolation rates slower than 120 minutes/inch are considered impermeable.
- e. Soils without expandable clays.

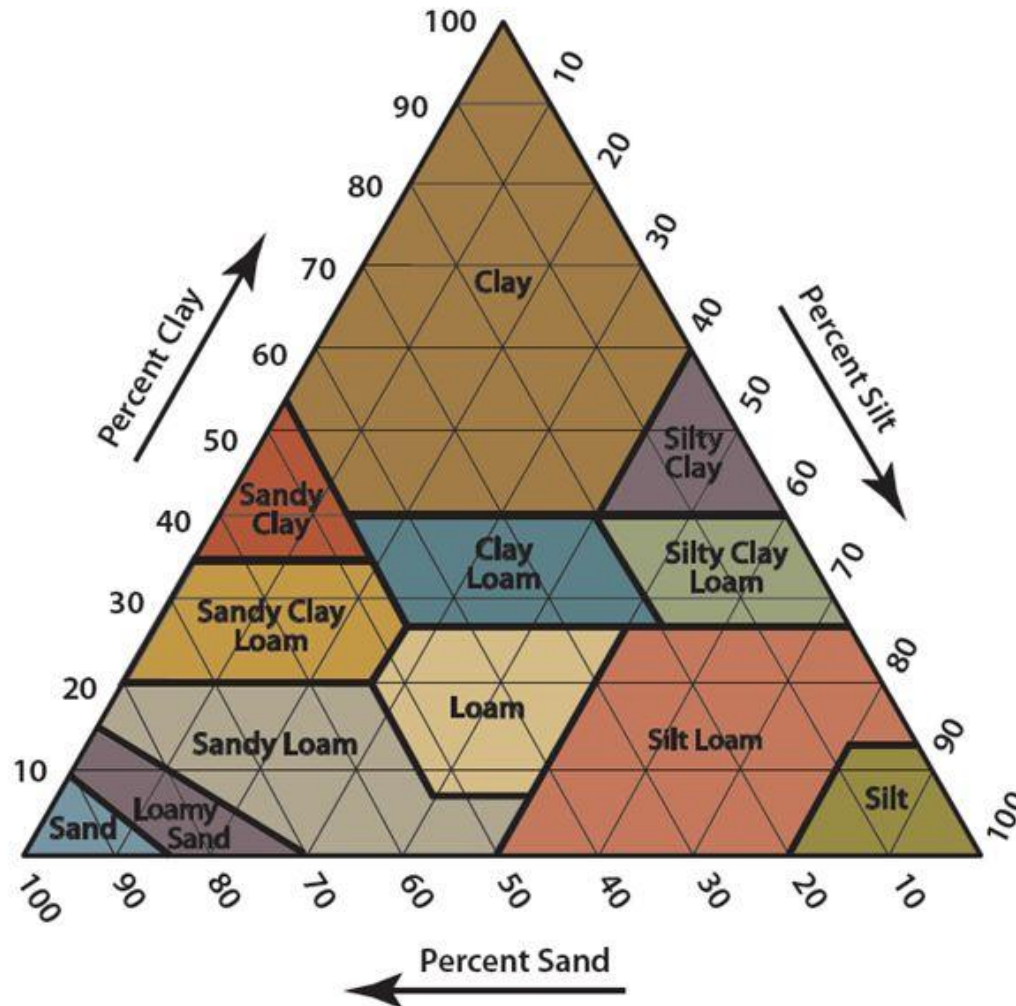
USCS describes soils with a 2-letter symbol based on the gradation of a soil.

- % retained or % passing
- #4 sieve – gravel/sand
- #200 – sand/silt



Primary Divisions		Group Symbol		Descriptions
COARSE GRAINED SOILS Sands/Gravels Over 50% retained on #200 sieve	GRAVELS Over 50% of coarse material retained on #4 sieve	CLEAN GRAVEL Less than 5% passing #200 sieve	GW	Well graded gravel, many different particle sized, little or no fines
			GP	Poorly graded, few different particle sizes, little or no fines
		GRAVEL WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures, fractured schist
			GC	Clay-like gravels, gravel-sand-clay mixtures
	SAND Over 50% of coarse material passed #4 sieve	CLEAN SANDS Less than 5% passing #200 sieve	SW	Well graded sands, many different particle sizes, little or no fines
			SP	Poorly graded, few different particle sizes, little or no fines
		SAND WITH FINES	SM	Silty sands, sand-silt-gravel mixtures, Fairbanks Silt Loam
			SC	Clay-like gravels, gravel-sand-clay mixtures
FINE GRAINED SOILS Silts/Clays Over 50% passing the #200 sieve	SILTS AND CLAYS Liquid limit is less than 50%		ML	Inorganic silts, slight to no plasticity
			CL	Inorganic clays, low to moderate plasticity
			OL	Organic silts and clays of low plasticity
	SILTS AND CLAYS Liquid limit is more than 50%		MH	Inorganic silts, moderate to high plasticity
			CH	Inorganic clays, high plasticity, fat clays
			OH	Organic silts and clays of high plasticity

SOIL TEXTURE TRIANGLE



USDA classification system describes soil texture as the relative amount of sand, clay, silt and combinations thereof

Soil Texture

The “feel” of the soil when moist quantity is manipulated.

- Sands are gritty like salt or sugar
- Soil with a lot of silt will feel silky, similar to flour
- Clay tends to be greasy and sticky, easily forms a ball

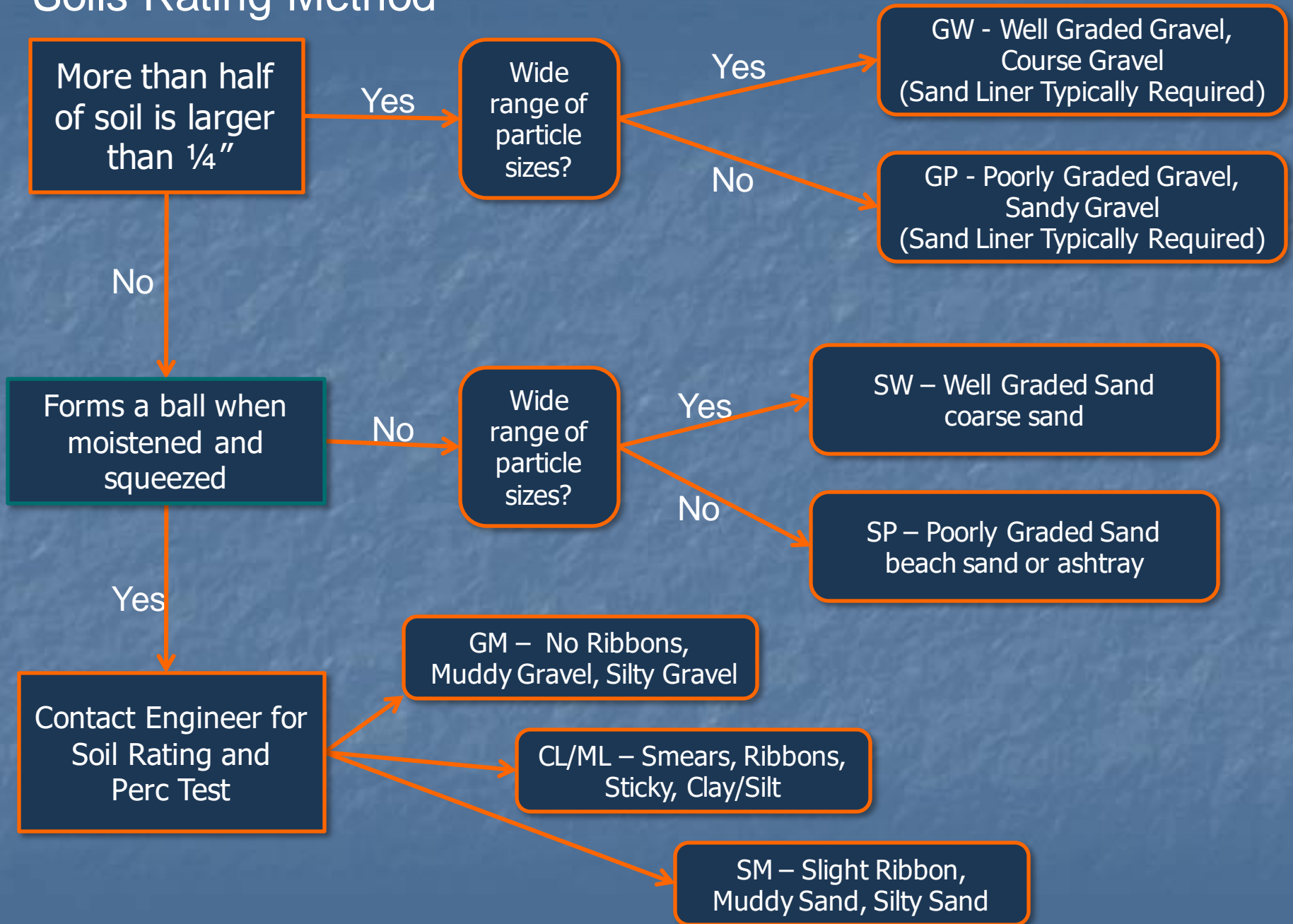
Most soils have a varying amount of these particles and will have a combination of properties



4/18/2023

Picture from [Quick Reference Guide: Assessing soil texture | VRO | Agriculture Victoria](#)

Soils Rating Method



Percolation Tests

- Currently required by DEC regulations to be performed by a registered professional engineer (hopefully this will change!)
- The only soil types that do not require a percolation test are SP/SW, unless there is a specific exception provided for an area
 - Nikiski Sands
 - Fairbanks Silt Loam (windblown dry loess)
 - Fairbanks Schist (highly fractured weathered schist)
- OR, you do not need a percolation test in GP/GW soils IF you install a 2 foot thick sand liner
 - Tok (area-wide sand liner waiver for GP/GW)

Sand Liners

- REQUIRED if GP/GW soils percolate faster than 1 minute/inch
- Application rate of 150 sf/bedroom must be used
- Limited to a bed or shallow trench type leach field
- Minimum 2 feet thick below leach rock
- Bottom of leach rock (not bottom of sand) still required to be 4-feet above seasonal high water table
- Material specifications at Division 20, Article 2.2 in OWSIM
- RECOMMEND increasing size of field at least 50%

Lift Stations

- All lift stations or pump stations must have a high water alarm
 - Existing lift stations must be equipped if they don't have one!
- Electrical work should be done by a licensed electrician
- Pump must be on separate circuit than alarm
- UL listed controls, NEMA 4x water proof enclosures
- Set up piping to allow pumped to be pulled without entering the lift station

PWS Reminder

- A wastewater system must meet the minimum separation distance requirement to a public water system source
- This includes surface water intakes!
 - 200 ft from the source instead of the usual 100 feet to surface water



20 Minutes of Ed

- What a current installer may or may not see upon entry
- Refresher application form (permit change/renewal)
- 24 hr notifications in Ed (phone numbers will no longer be monitored)
- Where to find the DOC form associated with the 24-hr notice
- Quirk for those lucky enough to not have any rejected or in process DOC's.

Big “no-no’s”

- “this might work for a couple years but then you will need an engineer to design a system”
- “I won’t install a lift station this time but next time you will need one”
- “Do you want to pay for the documented system or undocumented system?”
- “Put a fish head in your septic tank”
- Reminder – the client is not always right

Don’t be afraid to walk away from a job, it may save you more in the future than you will lose today!

Questions/Open Discussion

